

August 2009 Climate Summary for Southwest Lower Michigan

Nathan Jeruzal

National Weather Service Grand Rapids, MI

Overview

August 2009 generally was a quiet month. Average temperatures were within a half of a degree of normal at most locations (Table 1). Precipitation at most locations ranged from one to locally three inches above normal.

It was not a typical August in many respects. Some of the abnormalities of the month included a general lack of severe weather, a morning of frost up north, two episodes of lake effect rain showers, and two abnormally cold periods.

The month started out on the cool side as the persistent northwest flow aloft from the spring and summer continued across the region. A parade of systems moved through the area about every 24-36 hours through Tuesday night the 4th. A few light showers and an occasional storm accompanied these fronts, but nothing significant occurred.

High pressure then built across the region from the 5th through the 7th, bringing cool and quiet weather to the area. On the night of Friday the 7th, a warm front began to approach the area from the southwest. The heat that had been locked in place across the Southern Plains and Southwestern states finally made a move toward the Great Lakes. Showers and storms developed over the area during the early morning hours on Saturday the 8th. Heavier rains occasionally occurred with these storms; however, no significant wind or hail occurred. Rainfall totals of 1 to 2 inches occurred with this event. The warm front moved to around the I-96 corridor during the evening hours on Saturday. Showers and storms developed once again just north of the warm front and brought another 1 to 2 inches of rainfall to some locations, producing standing water in some low lying locations.

The warm front surged north of the area by Sunday morning the 9th, and temperatures quickly heated up with a very warm air mass in place and plenty of sunshine. This ended up being the warmest day of the month, as many locations along and south of Interstate 96 warmed into the 90s. Late in the day, a round of showers and storms entered the southern portion of the forecast area. The storms fed off a very unstable air mass, producing significant severe weather across Ottawa county, Southeast Muskegon county, and portions of Northern Kent County. Winds up to 80 mph brought down many trees in the communities of Grand Haven, Fruitport, Kent City, and Sparta. Some damage was also occurred at a middle school just northwest of the City of Jackson. Additional storms that developed on Sunday night brought 1 to locally 3 inches of rain from roughly Holland to Lansing. The active weather then came to an end during the afternoon hours on the 10th.

Quiet weather and warming temperatures then occurred from late on the 10th until the afternoon of the 16th. A series of cold fronts then moved through the area from the 17th through the 22nd, bringing

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much cooler weather into the area. There was enough of a temperature difference between the cool air and the surface of Lake Michigan to generate lake effect rain showers in addition to daytime instability showers. Temperatures across the area struggled to get out of the 60s on the 21st through the 23rd. A couple more frontal systems moved through the area on the 25th and 26th bringing more rainfall to the area. Cooler air moved back in for the period of the 27th through the end of the month. More lake effect rain showers occurred on the 29th and the morning of the 30th. High pressure then moved in for the 30th and 31st, allowing for a night of frost over the northern portion of the forecast area.

Local notes of interest:

Grand Rapids experienced a record low maximum temperature of 62 degrees on the 29th. The old record was 64 degrees from 1982. Grand Rapids had a couple of strong wind gusts during the course of the month. A 46 mph wind gust occurred on the evening of August 9th, and a 54 mph wind gust occurred on the afternoon of the 16th. Both wind gusts were associated with thunderstorms that moved across the area.

Muskegon experienced a record low minimum of 41 degrees on the morning of the 31st. The old record was 42 degrees from 1915. A wind gust of 61 mph occurred at the Muskegon County Airport on the 9th as a line of severe thunderstorms moved across the area.

Lansing saw more than 3 inches of rain above the normal for the month. Three days during the month, the 8th, 10th, and 26th each recorded more than an inch of rainfall. Widespread showers and storms moved across the area during the first half of the day on the 8th. A line of showers and storms trained across Lansing during the early morning hours of the 10th. Showers and a few storms moved across the area on the 26th, just north of a stationary front situated just south of the area.

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TABLE 1. Reported temperature, precipitation and snowfall amounts for July 2009 at selected climate stations in Southwest Lower Michigan. Normals are computed from 30-year averages from 1971-2000.

Location		Temperature (degrees F)	Precipitation (inches)	Snowfall (inches)
Grand Rapids	<i>Reported</i>	69.0	4.74	0.0
	<i>Normal</i>	69.4	3.78	0.0
	<i>Departure</i>	-0.4	0.96	0.0
Lansing	<i>Reported</i>	68.2	6.44	0.0
	<i>Normal</i>	68.4	3.46	0.0
	<i>Departure</i>	-0.2	2.98	0.0
Muskegon	<i>Reported</i>	67.8	5.04	0.0
	<i>Normal</i>	68.5	3.77	0.0
	<i>Departure</i>	-0.7	1.27	0.0

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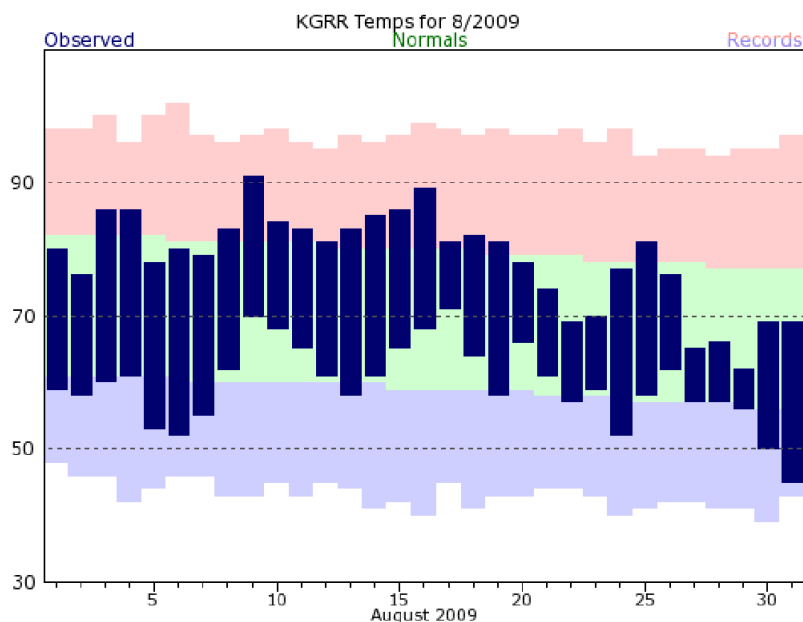


Figure 1. Observed temperatures at the Grand Rapids International Airport. Dark blue bars are the temperature range for each day. The green strip indicates the normal range of temperatures. Record high and low temperatures are indicated at the top of the pink area and the bottom of the blue area, respectively. Normals computed as in Table 1.

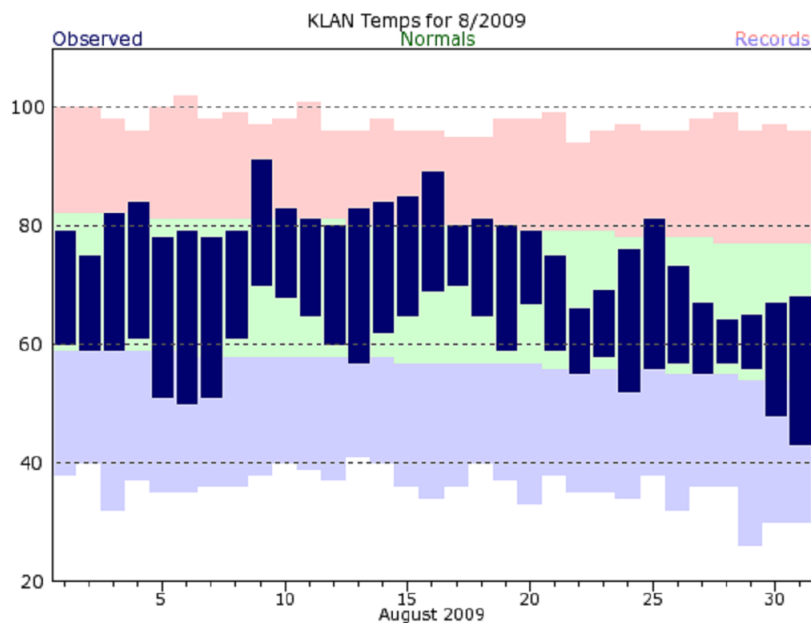


Figure 2. As in Figure 1, except for the Lansing/Capital City airport.

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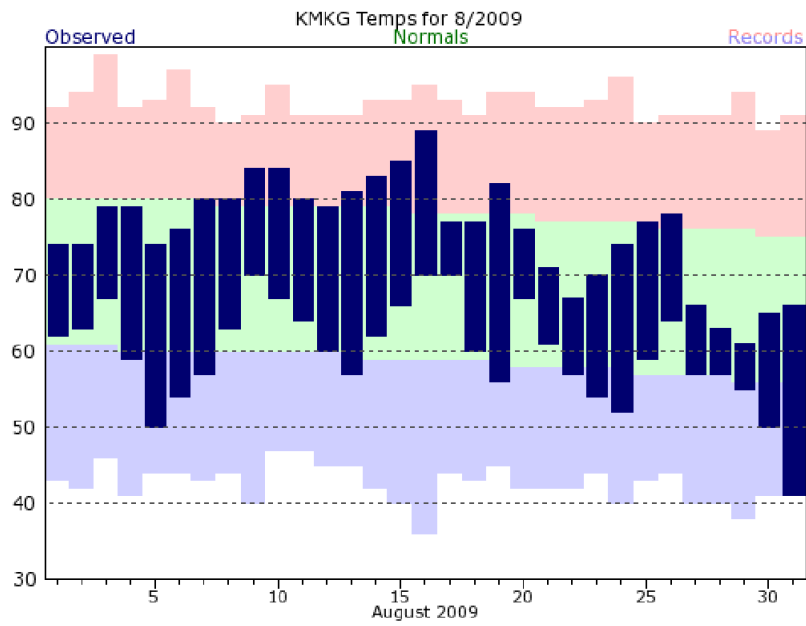
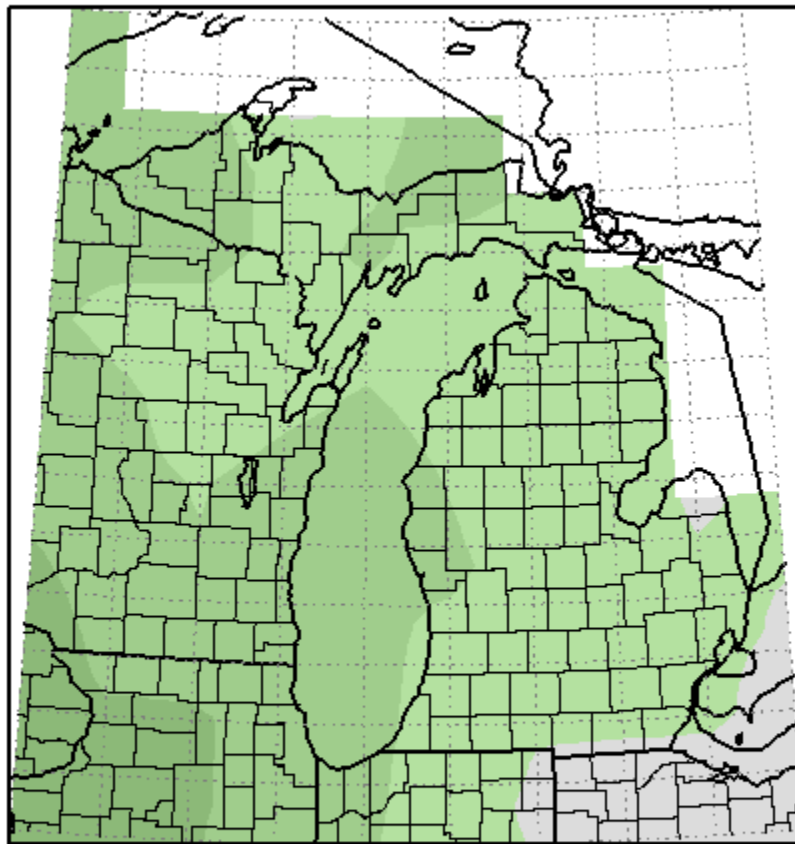


Figure 3. As in Figure1, except for the Muskegon County airport.

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Average Temperature Departure from Mean in Degrees F
August 1, 2009 to August 31, 2009



NOAA Midwestern Regional Climate Center
Illinois State Water Survey
Champaign, Illinois

Figure 4. Average temperature departure (degrees F) for August of 2009.

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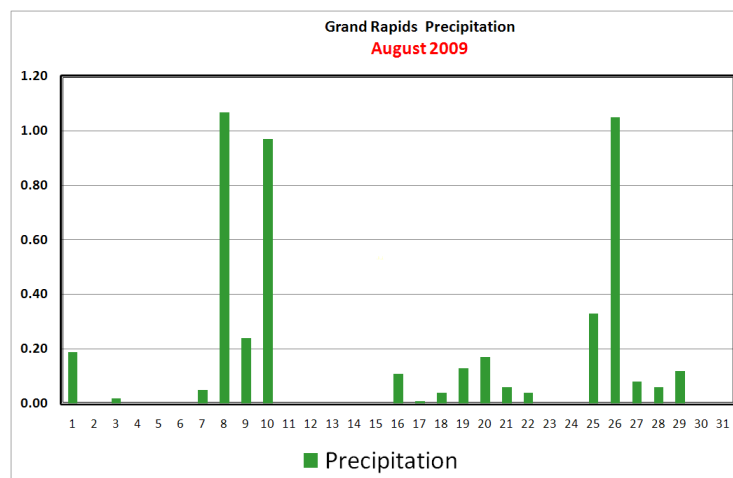


Figure 5. Daily precipitation in inches for August of 2009 at the G.R. Ford International Airport.

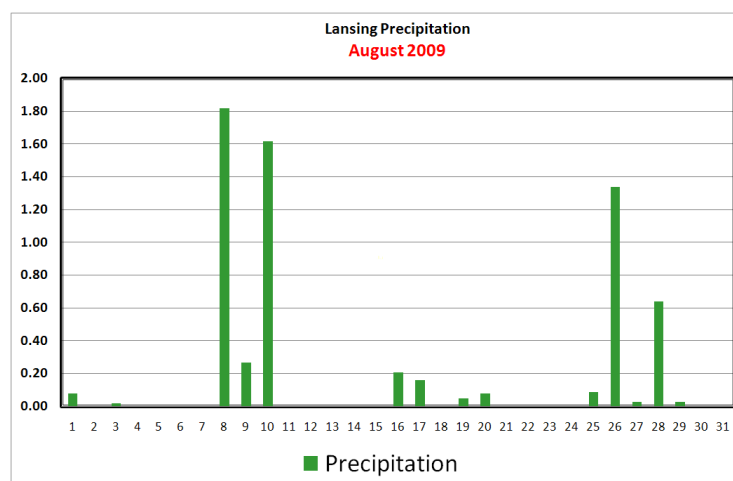


Figure 6. As in Figure 5, except for the Lansing Capital City Airport.

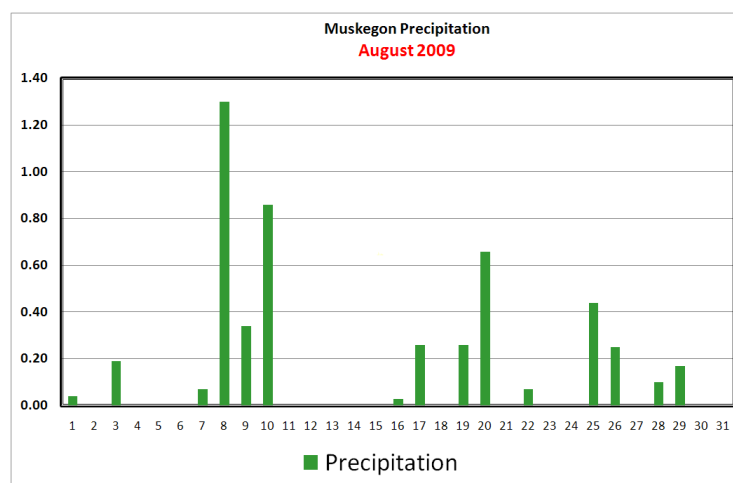
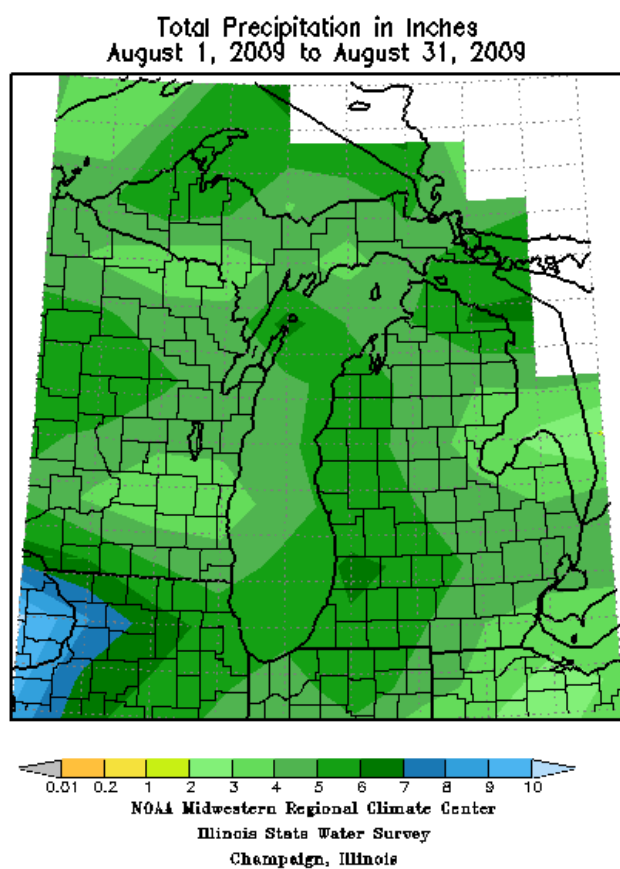
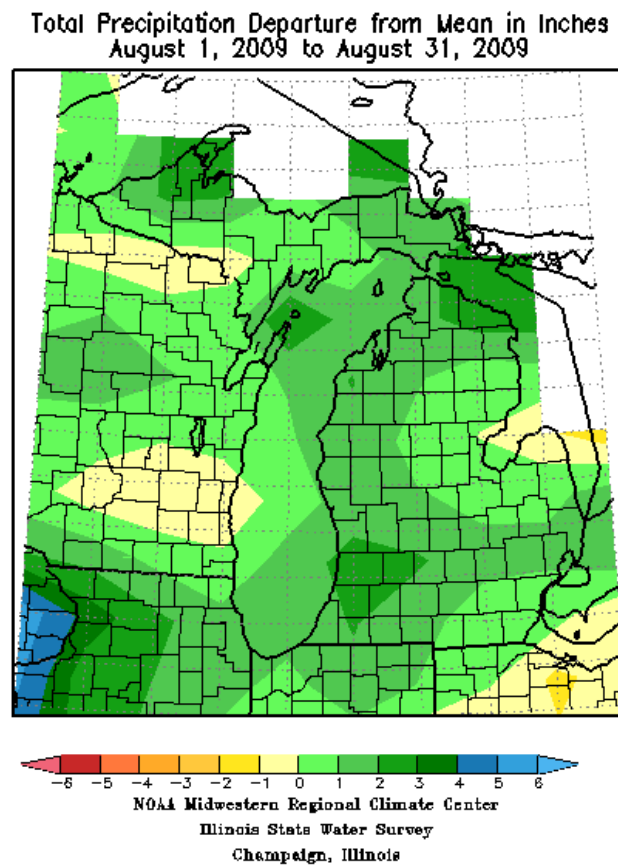


Figure 7. As in Figure 5, except for the Muskegon County Airport

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(a) Inches of Total Precipitation



(b) Total Precipitation Departure from Mean

Figure 8. (a) Total precipitation in inches for August 2009, and (b) Total precipitation departure from the mean.

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Highlights of the month

8th – Widespread showers and storms affected the area during the morning and early afternoon hours. Another line of heavier showers and storms formed from Muskegon, to just north of Grand Rapids late in the night time hours.

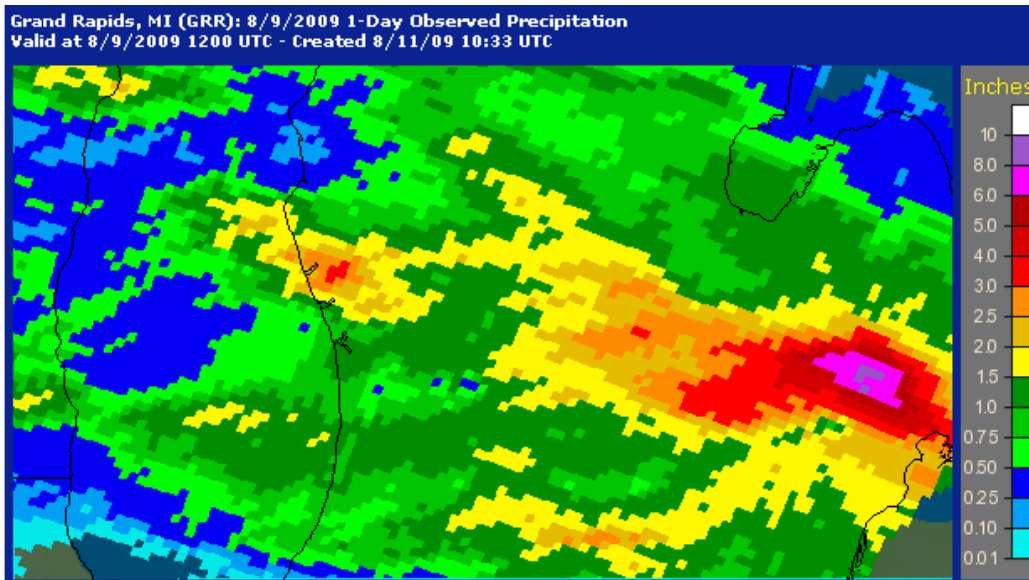


Figure 9. Rainfall from 8 am Saturday, August 8th - 8 am Sunday, August 9th

9th – Warmest day of the month with highs in the 90s. The only widespread severe weather event of the month occurred in the late afternoon and evening hours. The worst of the severe weather occurred from Ottawa County into Southeast Muskegon County and across Northern Kent County. Winds up to 80 mph severely damaged many trees, especially in the Fruitport and Kent City/Sparta areas. Some apple orchards sustained significant damage. Additional heavy rainfall occurred late in the night time hours from Holland, to Southern Kent County, to the Lansing area (Figure 10).

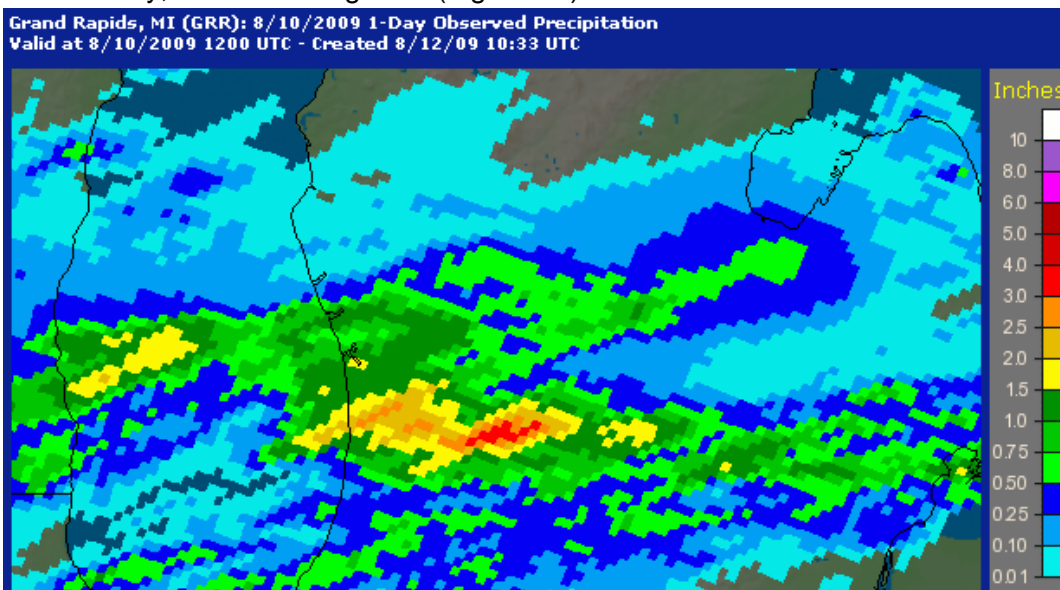


Figure 10. Rainfall from 8 am Sunday, August 9th – 8 am Monday, August 10th

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16th – Scattered thunderstorms produced some small hail and wind gusts to 50 mph during the afternoon and evening hours.

21st through the 23rd – Lake effect rain showers occurred across the western portion of the warning and forecast area. High temperatures only warmed mainly into the 60s each afternoon.

29th and 30th – Second round of lake effect rain showers of the month occurred along the lakeshore counties. High temperatures only warmed mainly into the 60s each afternoon. A couple of waterspouts were reported over portions of Lake Michigan toward Chicago.

31st – An early frost occurred over the northern portion of the forecast area. This included the area north of a line from Scottville, to White Cloud, and to Clare. The coldest temperature recorded was 28 degrees in Leota in Northern Clare County.